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(52) UK CL (Edition S )

**A5R RGEX**

(56) Documents Cited

**GB 2323289 A GB 2205499 A WO 97/12641 A1**

(58) Field of Search

**UK CL (Edition S ) A5R RGEX**

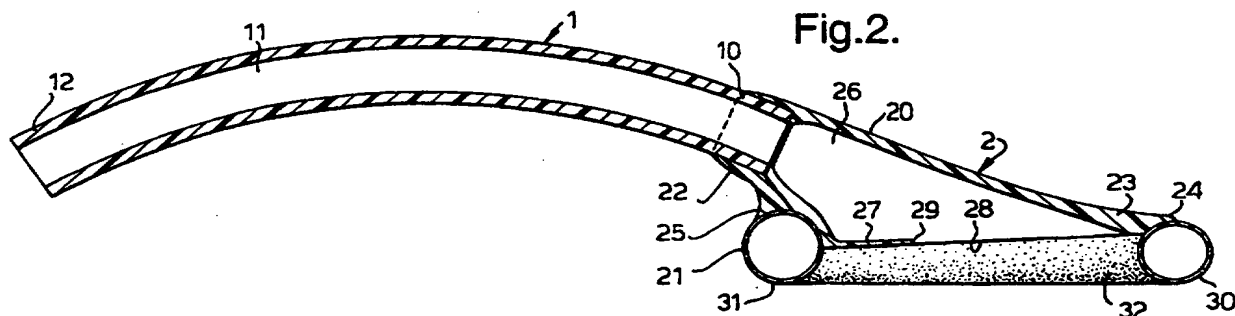
**INT CL<sup>7</sup> A61M 16/04**

**Online: WPI, EPODOC, JAPIO**

(54) Abstract Title

**Laryngeal mask assembly**

(57) A laryngeal mask has a mount 20 secured with the patient end 10 of a tube 1, which supports an inflatable oval cuff 21 that seals with tissue in the region of the hypopharynx. The tube 1 opens into a cavity 26 within the mount 20 and the cavity opens at the patient end via an opening through the centre of the cuff 21. A part of the mount 20 is formed into a thin web 27 of material extending laterally across the rear of the opening so that the cavity 26 opens through an aperture 28 located towards the forward end of the cuff.



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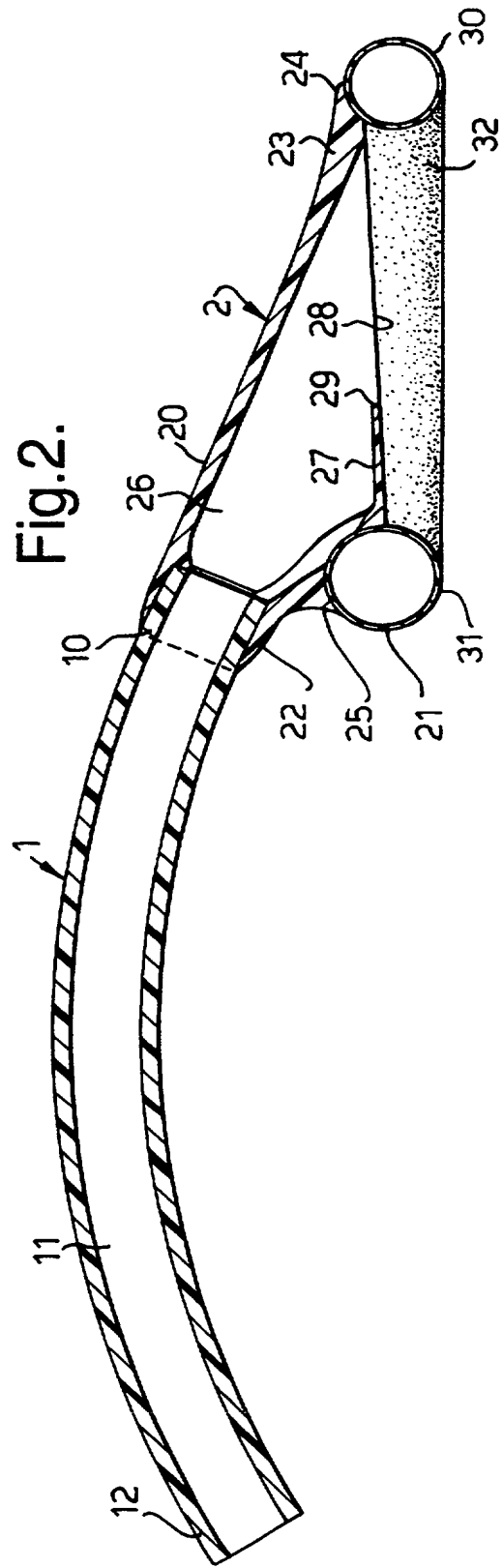
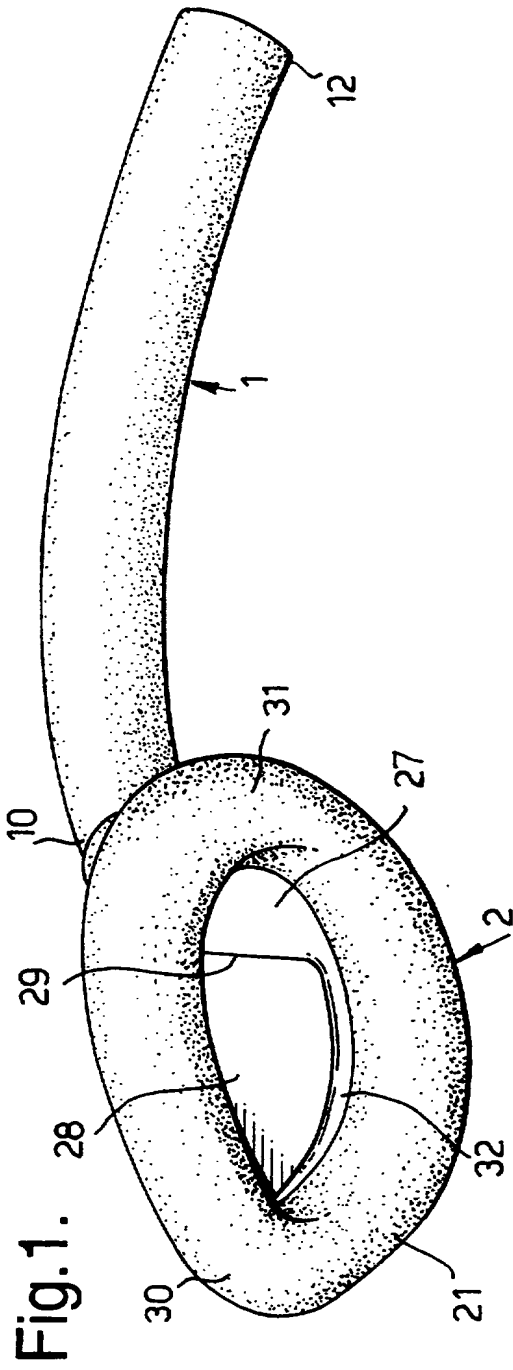


Fig.3.

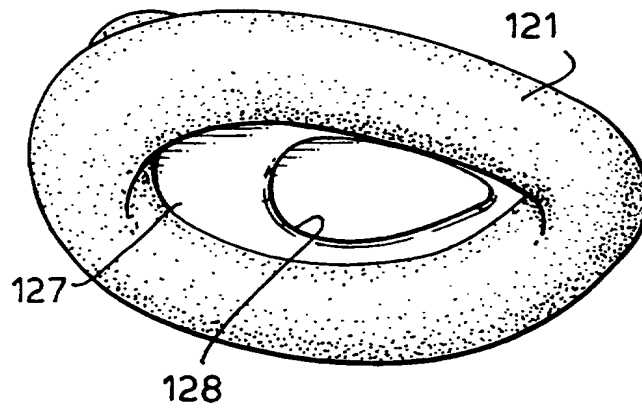
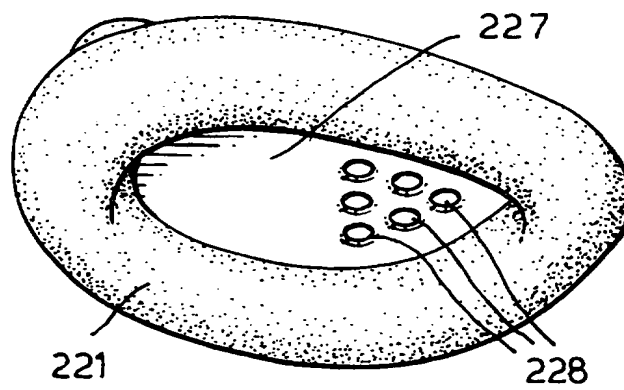


Fig.4.



**LARYNGEAL MASK ASSEMBLIES**

This invention relates to laryngeal mask assemblies and their manufacture

It is common practice to use an airway known as a laryngeal mask for administering anaesthetic and ventilation gases to a patient. These airways comprise a tube with an inflatable mask or cuff at one end, the tube being inserted in the patient's mouth so that one end is located in the hypopharynx and so that the mask forms a seal in this region with the surrounding tissue. Laryngeal masks are described in, for example, US 5355879, US 5305743, US 5297547, US 5282464, GB 2267034, US 5249571, US 5241956, US 5303697, GB 2249959, GB 2111394, EP 448878, US 4995388, GB 2205499, GB 2128561, GB 2298797 and GB 2334215.

Laryngeal masks have several advantages over endotracheal tubes, which are longer and seal with the trachea below the vocal folds. One potential problem with laryngeal masks is that there is a risk that they may be blocked by the epiglottis during insertion.

It is an object of the present invention to provide an alternative laryngeal mask assembly.

According to one aspect of the present invention there is provided a laryngeal mask assembly comprising a tube, a mount secured with the patient end of the tube, an annular cuff extending around the patient end of the mount, and the mount having an internal cavity communicating with the tube at one end and opening from the assembly at its other end

within a central region of the cuff, the assembly having a lateral member extending across the opening at one end such that the cavity opens at the patient end of the assembly through an aperture located towards the forward end of the cuff.

According to another aspect of the present invention there is provided a laryngeal mask assembly comprising a tube and a mask at the patient end of the tube, the mask including a mount secured with the tube, and an inflatable cuff mounted with the mount and adapted to seal in the region of the hypopharynx, the mount having an internal cavity that opens into the tube at its machine end, the cuff extending in a substantially oval configuration and is inclined relative to the axis of the tube so that one end of the cuff is directed forwardly and the other end is directed rearwardly, the cuff enclosing a central region of generally oval shape, and a lateral member extending across the central region at the rear end such that the cavity opens at the patient end through an aperture located towards the forward end of the cuff.

The lateral member is preferably a thin web and is preferably a part of the mount.

A laryngeal mask assembly according to the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of the assembly;

Figure 2 is a cross-sectional, side elevation view of the assembly; and

Figures 3 and 4 are perspective views of the patient end of alternative assemblies.

With reference first to Figures 1 and 2, the laryngeal mask assembly comprises a tube 1 and a mask 2 mounted at the patient end 10 of the tube.

The tube 1 is of a bendable plastics material, such as PVC and is curved along its length. A bore 11 extends along the tube from its patient end 10 to its rear, machine end 12.

The mask 2 comprises a mount 20 and an inflatable cuff 21. The mount 20 is of a relatively stiff plastics material and is of generally shoe shape. The rear, machine end of the mount has a neck 22 of circular section embracing and bonded to the patient end 10 of the tube 1. The mount 20 tapers outwardly from the machine end 22 to its patient end 23, which is inclined to the axis of the machine end at an angle of about  $25^{\circ}$  so that the patient end of the mount has an oval shape with its forward end 24 being more pointed than its rear end 25. The patient end 23 of the mount 20 is inclined to face towards the inner side of the curve of the tube 1. Internally, the machine end 22 of the mount 20 communicates with a cavity 26 in the mount that increases in cross-sectional area along its length, from the machine end. The mount 20 also has a lateral member in the form of a thin web 27 formed as a part of the mount. The web extends laterally across the rear 25 of its patient end 23 so that the cavity 26 opens at the patient end through an aperture 28 located towards the forward end of the cuff 21, the aperture being defined between a forward edge 29 of the web and the forward part of the mount.

The cuff 21 is tubular and of a thin flexible plastics material. The cuff 21 is formed into an annulus of the same shape as the patient end 23 of the mount 20 so that it is oval with its forwardly-directed end 30 being more pointed than its rearwardly-directed end 31. The cuff 21 encloses a central region 32 of the same shape as the patient end 23 of the mount 20. The cuff 21 is attached around the patient end 23 of the mount 20 such as by means of an adhesive. The web 27 of the mount extends laterally across the rear end of the central region 32, separating it from the cavity 26. The cuff 21 is inflated and deflated by means of an inflation line (not shown), which may be a separate small-bore tube communicating with the interior of the cuff and extending rearwardly along the outside of the tube. Alternatively, the inflation line may include a small-bore, minor lumen extending within the wall of the main tube. When inflated in position in a patient, the cuff 21 expands to contact patient tissue in the region of the hypopharynx.

The web 27 helps prevent entry of the epiglottis into the patient end of the assembly without substantially impeding gas flow along the assembly, because the size of the aperture 28 bordered by the edge 29 of the web 27 is still larger than the cross-section of the tube 1. Because the web 27 is located at the rear end of the cuff it does not obstruct any tube or probe that might be inserted along the assembly.

The lateral member or web could take several different forms. For example, as shown in Figure 3, the web 127 could extend around the entire inner periphery of the cuff 121 and have an aperture 128 of oval shape located towards the forward end of the cuff. Alternatively, as shown in Figure 4, the lateral member 227 could have an array of several smaller holes

228 located towards the forward end of the cuff 221. This latter embodiment might be less suitable where tubes or the like are to be inserted along the assembly.



**CLAIMS**

1. A laryngeal mask assembly comprising a tube, a mount secured with the patient end of the tube, an annular cuff extending around the patient end of the mount, and the mount having an internal cavity communicating with the tube at one end and opening from the assembly at its other end within a central region of the cuff, and wherein the assembly has a lateral member extending across the opening at one end such that the cavity opens at the patient end of the assembly through an aperture located towards the forward end of the cuff.
2. A laryngeal mask assembly comprising a tube and a mask at the patient end of the tube, the mask including a mount secured with the tube, and an inflatable cuff mounted with the mount and adapted to seal in the region of the hypopharynx, wherein the mount has an internal cavity that opens into the tube at its machine end, wherein the cuff extends in a substantially oval configuration and is inclined relative to the axis of the tube so that one end of the cuff is directed forwardly and the other end is directed rearwardly, wherein the cuff encloses a central region of generally oval shape, and wherein a lateral member extends across the central region at the rear end such that the cavity opens at the patient end through an aperture located towards the forward end of the cuff.
3. An assembly according to Claim 1 or 2, wherein the lateral member is a thin web.

4. An assembly according to any one of the preceding claims, wherein the lateral member is a part of the mount.
5. A laryngeal mask assembly substantially as hereinbefore described with reference to the accompanying drawings.
6. Any novel and inventive feature or combination of features as hereinbefore described.



INVESTOR IN PEOPLE

**Application No:** GB 0020274.7  
**Claims searched:** 1-5

**Examiner:** Peter Davey  
**Date of search:** 1 February 2001

## **Patents Act 1977**

### **Search Report under Section 17**

#### **Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): A5R (RGEX)

Int Cl (Ed.7): A61M 16/04

Other: Online: WPI, EPODOC, JAPIO

#### **Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2323289 A (SMITHS INDUSTRIES), see eg.Figs. 2 and 3	1 at least
X	GB 2205499 A (BRAIN), see eg. Fig. 2	"
X	WO 97/12641 A1 (BRAIN), see eg. Fig. 5	"

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

